UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,459	08/01/2003	James Aweya	120-292	4668

23577   7590   08/29/2007

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EXAMINER
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ART UNIT	PAPER NUMBER
2616	

MAIL DATE	DELIVERY MODE
08/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/633,459	AWEYA ET AL.
	Examiner	Art Unit	
	Kan Yuen	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>05 July 2007</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-17</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1,3-9,11-17</u> is/are rejected.

7)☒ Claim(s) <u>2 and 10</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

Response to Arguments

1.   Applicant's arguments, see remark page 9, lines 14-25, filed on 7/5/2007, with respect to claims 6-7, 14-15 have been fully considered and are persuasive. The objections of claims 6-7, 14-15 have been withdrawn.

2.   Applicant's arguments, see remark page 10, lines 1-5, filed on 7/5/2007, with respect to claims 1-18 have been fully considered and are persuasive. The claims 1018 of 112 2nd rejection has been withdrawn.

3.   Applicant's arguments regarding about the non-statutory obviousness-type double patenting, see remark pages 10-11, filed on 7/5/2007 have been fully considered but they are not persuasive, because when the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process (see MPEP section 2112.02 Process claims).

4.   The 101 Rejection issued in the previous office action has been withdrawn.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140

F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29
USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir.
1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422
F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ
644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d)
may be used to overcome an actual or provisional rejection based on a nonstatutory
double patenting ground provided the conflicting application or patent either is shown to
be commonly owned with this application, or claims an invention made as a result of
activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a
terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with
37 CFR 3.73(b).

5.   Claims 1 and 9 are provisionally rejected on the ground of nonstatutory

obviousness-type double patenting as being unpatentable over claim 1 of copending

Application No. 10/426289. Although the conflicting claims are not identical, they are

not patentably distinct from each other because of the following.

For claims 1 and 9, claim 1 of copending Application No. 10/426289 disclosed

the method of

1. A method for controlling a data flow in a data network, the method comprising:

   selecting a stable integral controller gain k_i for said data network;

   measuring a data arrival rate $R(n)$ at time n;

   calculating a normalized error signal $e(n)$, according to the relation

   $e(n) = (T(n) - R(n))/x$,

   where $T(n)$ is an assigned capacity at time n, and x is a nominal packet size;

   computing a mark/drop probability $p(n)$ according to the relation

   $p(n) = \min \{ \max [p(n-1) + k_i \cdot \Delta t \cdot e(n), 0], p_{max} \}$

   where Δt is the time interval between a $(n-1)^{th}$ and the nth computation, and $0 < p_{max} \leq 1$; and

   executing a packet mark/drop routine based upon the calculated mark/drop probability $p(n)$.

Applicant's claims 1 and 9 merely narrowed down the scope of the claim 1 of copending Application No. 10/426289 by specifying the $R(n)$ is sum of the data arrival rates for a particular precedence grade under consideration plus the data arrival rates of all precedence grades with a higher priority than the particular precedent grade. In this case, the applicant's $R(n)$ is defined as the sum of all the precedence grade rates comparing with the copending application's $R(n)$ is one precedence grade rate. An official notice is taken that summing one or more grade rates can be done in similar manner, however its not considered as a new invention. Thus, it would have been obvious to the person of ordinary skilled in the art at the time of the invention to defined the $R(n)$ limit by summing all the incoming precedence grade rates. The motivation for summing all the grade rates is to compare the rates and select the best rate, so that the grade rate can be reserved in higher priority for transmission.

Claim 3 provisionally rejected on the ground of nonstatutory obviousness-type

double patenting as being unpatentable over claim 2 of copending Application No.

10/426289.

This is a provisional obviousness-type double patenting rejection.

For claim 3, claim 2 of copending Application No. 10/426289 disclosed the

method of:

> 2. The method of claim 1 wherein the step of selecting a stable integral controller gain k_i
>
> for said data network is preceded by the step of:
>
> pre-calculating a range within which all gains k_i result in a stable gain.

Claim 4 provisionally rejected on the ground of nonstatutory obviousness-type

double patenting as being unpatentable over claim 3 of copending Application No.

10/426289.

This is a provisional obviousness-type double patenting rejection.

For claim 4, claim 3 of copending Application No. 10/426289 disclosed the

method of:

> 3. The method of claim 2 wherein the step of pre-calculating a range within which all
>
> gains k_i result in a stable gain for said data network, is determined according to the
>
> method of:

obtaining for said network a value for said network a set of parameters k, d_0, and τ,

where k is a steady-state gain of said network,

d_0 is a time delay of said network, and

τ is a time constant of said network;

determining a z_1 in the interval $\left(0, \dfrac{\pi}{2}\right)$ satisfying

$$\cot(z_1) = \frac{\tau}{d_0} z_1$$; and

computing a range of stable gains k_i for said data network according to

$$-\frac{\tau}{k d_0^2} z_1 \sqrt{z_1^2 + \frac{d_0^2}{\tau^2}} < k_i < 0 \quad .$$

Claim 5 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 4 of copending Application No. 10/426289.

This is a <u>provisional</u> obviousness-type double patenting rejection.

For claim 5, claim 4 of copending Application No. 10/426289 disclosed the method of:

4. The method of claim 1 wherein the step of measuring a data arrival rate R(n) at time

n further comprises:

filtering the data arrival rate R(n) according to the relation:

$$R'(n) = (1 - \beta) \cdot R'(n-1) + \beta \cdot R(n)$$

where β is a filter gain parameter such that $0 < \beta < 1$,

R'(n-1) is the filtered data arrival rate at time n-1, and

R'(n) is the desired filtered data arrival rate at time n.

Claims 6-7 are provisionally rejected on the ground of nonstatutory obviousness-

type double patenting as being unpatentable over claim 5 of copending Application No.

10/426289. Although the conflicting claims are not identical, they are not patentably

distinct from each other because of the following.

For claims 6-7, claim 5 of copending Application No. 10/426289 disclosed the

method of:

5. The method of claim 1 further comprising a step, preceding the step of executing a

packet mark/drop routine, of:

testing the data arrival rate R(n) against a rate threshold T_L; and

if the data arrival rate R(n) is below or equal to the rate threshold T_L then

bypassing the step of executing a packet mark/drop routine.

Applicant's claims 6-7 are merely narrow down the scope of the claim 5 of

application no. 10/426289 by specifying testing the cumulative data arrival rate R(n). In

this case, testing one or more data arrival rate is not considered as a new invention,

because testing one data arrival rate is similar to testing multiple rates. Thus, it would

have been obvious to the person of ordinary skilled in the art at the time of the invention

to testing multiple data rate. The motivation for using the testing multiple data rate being

that it improves system parameters such as delay or bandwidth usage.

Claim 8 provisionally rejected on the ground of nonstatutory obviousness-type

double patenting as being unpatentable over claim 6 of copending Application No.

10/426289.

This is a _provisional_ obviousness-type double patenting rejection.

For claim 8, claim 6 of copending Application No. 10/426289 disclosed the

method of:

> 6. The method of claim 1 wherein the step of executing a packet mark/drop routine
>
> further comprises:
>
> marking/dropping packets according to a random number generator mark/drop
>
> scheme.

Claim 11 provisionally rejected on the ground of nonstatutory obviousness-type

double patenting as being unpatentable over claim 6 of copending Application No.

10/426289.

This is a _provisional_ obviousness-type double patenting rejection.

For claim 11, claim 9 of copending Application No. 10/426289 disclosed the

method of:

9. The apparatus of claim 8 wherein the integral controller gain k_i setting for which the said network is stable is chosen from a pre-calculated range within which all gains k_i are gains for which said network is stable.

Claim 12 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 10 of copending Application No. 10/426289.

This is a <u>provisional</u> obviousness-type double patenting rejection.

For claim 12, claim 10 of copending Application No. 10/426289 disclosed the method of:

10. The apparatus of claim 9 wherein the pre-calculated range within which all gains k_i are gains for which said network is stable, is determined according to the method of:

   obtaining for said network a value for said network of a set of parameters k, d_0, and τ,

   where k is a steady-state gain of said network,

   d_0 is a time delay of said network, and

   τ is a time constant of said network;

determining a z_1 in the interval $\left(0, \dfrac{\pi}{2}\right)$ satisfying

$$\cot(z_1) = \frac{\tau}{d_0} z_1 \qquad \text{; and}$$

computing a range of stable gains k_i for said data network according to

$$-\frac{\tau}{kd_0^2} z_1 \sqrt{z_1^2 + \frac{d_0^2}{\tau^2}} < k_i < 0 \quad .$$

Claim 13 provisionally rejected on the ground of nonstatutory obviousness-type

double patenting as being unpatentable over claim 11 of copending Application No.

10/426289.

This is a _provisional_ obviousness-type double patenting rejection.

For claim 13, claim 11 of copending Application No. 10/426289 disclosed the

method of:

> 11. The apparatus of claim 8 wherein the data arrival rate measurer for measuring data
>
>   arrival rate $R(n)$ at time n further comprises:
>
>   a filter for filtering the data arrival rate $R(n)$ according to the relation:
>
> $R'(n) = (1 - \beta) \cdot R'(n-1) + \beta \cdot R(n)$
>
>   where β is a filter gain parameter such that $0 < \beta < 1$,
>
> $R'(n-1)$ is the filtered data arrival rate at time n-1, and
>
> $R'(n)$ is the desired filtered data arrival rate at time n.

Claims 14-15 are provisionally rejected on the ground of nonstatutory

obviousness-type double patenting as being unpatentable over claim 12 of copending

Application No. 10/426289. Although the conflicting claims are not identical, they are

not patentably distinct from each other because of the following.

For claims 14-15, claim 12 of copending Application No. 10/426289 disclosed the

method of:

12. The apparatus of claim 8 further comprising:

a test module for testing the data arrival rate $R(n)$ against a rate threshold T_L; and

if the data arrival rate $R(n)$ is below or equal to the rate threshold T_L then

bypassing the packet mark/drop module.

Applicant's claims 14-15 are merely narrow down the scope of the claim 12 of application no. 10/426289 by specifying testing the cumulative data arrival rate $R(n)$. In this case, testing one or more data arrival rate is not considered as a new invention, because testing one data arrival rate is similar to testing multiple rates. Thus, it would have been obvious to the person of ordinary skilled in the art at the time of the invention to testing multiple data rate. The motivation for using the testing multiple data rate being that it improves system parameters such as delay or bandwidth usage.

Claim 16 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 13 of copending Application No. 10/426289.

This is a <u>provisional</u> obviousness-type double patenting rejection.

For claim 16, claim 13 of copending Application No. 10/426289 disclosed the method of:

13. The apparatus of claim 8 wherein the packet mark/drop module further comprises:

a random number generator drop scheme module.

Claim 17 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 15 of copending Application No. 10/426289. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following.

For claim 17, claim 15 of copending Application No. 10/426289 disclosed the method of

15. An article of manufacture for controlling a data flow in a data network, the article of manufacture comprising:

at least one processor readable carrier, and instructions carried on the at least one carrier; wherein the instructions are configured to be readable from the at least one carrier by at least one processor and thereby cause the at least one processor to operate so as to:

select a stable gain of a integral controller gain k_i for said data network;

measure a data arrival rate R(n) at time n;

calculate a normalized error signal e(n), according to the relation

e(n) = (T(n) − R(n))/x,

where T(n) is an assigned capacity at time n, and x is a nominal packet size;

compute a mark/drop probability p(n) according to the relation

p(n) = min { max [p(n-1) + k_i · Δt · e(n), 0] , p_{max} }

where Δt is the time interval between a (n-1)th and the nth computation, and 0 < p_{max} ≤ 1; and

execute a packet mark/drop routine based upon the calculated mark/drop probability p(n).

Applicant's claim 17 merely narrowed down the scope of the claim 15 of copending Application No. 10/426289 by specifying the R(n) is sum of the data arrival rates for a particular precedence grade under consideration plus the data arrival rates of all precedence grades with a higher priority than the particular precedent grade. In this case, the applicant's R(n) is defined as the sum of all the precedence grade rates comparing with the copending application's R(n) is one precedence grade rate. An official notice is taken that summing one or more grade rates can be done in similar manner, however its not considered as a new invention. Thus, it would have been obvious to the person of ordinary skilled in the art at the time of the invention to defined the R(n) limit by summing all the incoming precedence grade rates. The motivation for summing all the grade rates is to compare the rates and select the best rate, so that the grade rate can be reserved in higher priority for transmission.

Claim 18 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 16 of copending Application No. 10/426289. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following.

For claim 18, claim 16 of copending Application No. 10/426289 disclosed the method of

16. A signal embodied in a carrier wave and representing sequences of instructions

which, when executed by at least one processor, cause the at least one processor to

control a data flow by performing the steps of:

selecting a stable gain combination of a integral controller gain k_i;

measuring a data arrival rate R(n) at time n;

calculating a normalized error signal e(n), according to the relation

e(n) = (T(n) – R(n))/x,

where T(n) is an assigned capacity at time n;

computing a mark/drop probability p(n) according to the relation

$p(n) = \min \{ \max [p(n-1) + k_i \cdot \Delta t \cdot e(n), 0], p_{max} \}$

where Δt is the time interval between a $(n-1)^{th}$ and the nth computation, and 0

$< p_{max} \le 1$; and

executing a packet mark/drop routine based upon the calculated mark/drop

probability p(n).

Applicant's claim 18 merely narrowed down the scope of the claim 16 of

copending Application No. 10/426289 by specifying the R(n) is sum of the data arrival

rates for a particular precedence grade under consideration plus the data arrival rates of

all precedence grades with a higher priority than the particular precedent grade. In this

case, the applicant's R(n) is defined as the sum of all the precedence grade rates

comparing with the copending application's R(n) is one precedence grade rate. An

official notice is taken that summing one or more grade rates can be done in similar

manner, however its not considered as a new invention. Thus, it would have been

obvious to the person of ordinary skilled in the art at the time of the invention to defined

the R(n) limit by summing all the incoming precedence grade rates. The motivation for

summing all the grade rates is to compare the rates and select the best rate, so that the

grade rate can be reserved in higher priority for transmission.

Allowable Subject Matter

6.   Claims 2 and 10 are objected to as being dependent upon a rejected base claim,

but would be allowable if rewritten in independent form including all of the limitations of

the base claim and any intervening claims.

Conclusion

7.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kan Yuen whose telephone number is 571-270-2413. The examiner can normally be reached on Monday-Friday 10:00a.m-3:00p.m EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky O. Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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SUPERVISORY PATENT EXAMINER